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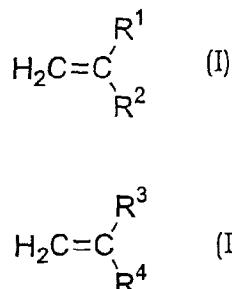
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: POLYMER AND ITS USE FOR THE TREATMENT AND/OR PREVENTION OF HYPERPHOSPHOREMIA



(57) Abstract: A polymer or its salt which is obtainable by polymerization of a monomer of the formula (I) or its salt in the presence of a radical initiator, or by polymerization of a monomer of the formula (I) or its salt with a monomer of the formula (II) or its salt in a molar ratio of (I):(II) being 1:0.1 to 1:25 in the presence of a radical initiator wherein R1 and R3 are each hydrogen atom or lower alkyl group, R2 and R4 are each acyl group, aliphatic silyl group, amino lower alkyl group which may have one or more suitable substituent(s), heterocyclic group which may have one or more suitable substituent(s) or carboxy group esterified by the residue of cellulose optionally substituted with one or more lower alkyl and/or lower alkenoyl.

INTERNATIONAL SEARCH REPORT

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| Inte | al Application No |
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| A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C08F20/00 C08F30/08 C08F26/00 A61K31/74 | | | | | | | |
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| According to International Patent Classification (IPC) or to both national classification and IPC | | | | | | | |
| B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 C08F A61K | | | | | | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | | | | | | |
| Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ, COMPENDEX, CHEM ABS Data | | | | | | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: left;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="text-align: left;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td> WO 95 05184 A (GELTEX PHARMA INC) 23 February 1995 (1995-02-23) the whole document ----- </td> <td>1-8, 10-16</td> </tr> </tbody> </table> | | Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | X | WO 95 05184 A (GELTEX PHARMA INC) 23 February 1995 (1995-02-23) the whole document ----- | 1-8, 10-16 |
| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | | | | | |
| X | WO 95 05184 A (GELTEX PHARMA INC) 23 February 1995 (1995-02-23) the whole document ----- | 1-8, 10-16 | | | | | |
| <input type="checkbox"/> Further documents are listed in the continuation of box C. | | | | | | | |
| <input checked="" type="checkbox"/> Patent family members are listed in annex. | | | | | | | |
| * Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed | | | | | | | |
| "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family | | | | | | | |
| Date of the actual completion of the international search | Date of mailing of the international search report | | | | | | |
| 19 April 2002 | 14.08.2002 | | | | | | |
| Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016 | Authorized officer Pollio, M | | | | | | |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 01/07958

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,5-6,9-16

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: [1], [5-6], [9-16]

A polymer or its salt which is obtainable by polymerization of a monomer of the formula I (as reported in claim 1 of the present application) or its salt in the presence of a radical initiator wherein R1 is hydrogen or lower alkyl group and R2 is an amino lower alkyl group which may have one or more suitable substituent(s); a polymer obtained by polymerization of a monomer of the formula I or its salt with a monomer of formula II or its salt in a molar ration of I to II being 1:0.1 to 1:25 in the presence of a radical initiator, wherein each R1 and R3 are independently hydrogen and / or lower alkyl group, each R2 and R4 are an amino lower alkyl group which may have one or more suitable substituent(s). A pharmaceutical composition comprising the polymer and its use in the treatment / prevention of hyperphosphoremia.

2. Claims: [1-16]

A polymer or its salt obtained by polymerization of a monomer of the formula I or its salt with a monomer of formula II or its salt in a molar ration of I to II being 1:0.1 to 1:25 in the presence of a radical initiator, wherein each R1 and R3 are independently hydrogen and / or lower alkyl group, one of R2 or R4 is an amino lower alkyl group which may have one or more suitable substituent(s) the other is an acyl or a carboxy group esterified by the residue of cellulose optionally substituted with one or more lower alkyl and / or lower alkenoyl. A pharmaceutical composition comprising the polymer and its use in the treatment / prevention of hyperphosphoremia.

3. Claims: [1], [5-6], [9-16]

A polymer polymerization of a monomer of the formula I or its salt with a monomer of formula II or its salt in a molar ration of I to II being 1:0.1 to 1:25 in the presence of a radical initiator, wherein each R1 and R3 are independently hydrogen and / or lower alkyl group, one of R2 or R4 is an amino lower alkyl group which may have one or more suitable substituent(s) the other a silyl group. A pharmaceutical composition comprising the polymer and its use in the treatment / prevention of hyperphosphoremia.

4. Claims: [1], [5-6], [9-16]

A polymer or its salt which is obtainable by polymerization of a monomer of the formula I or its salt with a monomer of

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

formula II or its salt in a molar ration of I to II being 1:0.1 to 1:25 in the presence of a radical initiator, wherein each R1 and R3 are independently hydrogen and / or lower alkyl group, one of R2 or R4 is an amino lower alkyl group which may have one or more suitable substituent(s) the other a heterocyclic group. A pharmaceutical composition comprising the polymer and its use in the treatment / prevention of hyperphosphoremia.

5. Claims: [1-16]

A polymer or its salt which is obtainable by polymerization of a monomer of the formula I (as reported in claim 1 of the present application) or its salt in the presence of a radical initiator; or by polymerization of a monomer of the formula I or its salt with a monomer of formula II or its salt in a molar ration of I to II being 1:0.1 to 1:25 in the presence of a radical initiator, wherein each R1 and R3 are independently hydrogen and / or lower alkyl group, each R2 and R4 are independently an acyl and / or a carboxy group esterified by the residue of cellulose (optionally substituted with one or more lower alkyl and / or lower alkenoyl) and / or an heterocyclic group and / or a silyl group. A pharmaceutical composition comprising the polymer and its use in the treatment / prevention of hyperphosphoremia.

6. Claims: [12-16]

A (homo)polymer or its salt which is obtainable by polymerization of a monomer of the formula I (as reported in claim 1 of the present application) or its salt in the presence of a radical initiator wherein R1 is hydrogen or lower alkyl group and R4 is aryl group. A pharmaceutical composition comprising the polymer and its use in the treatment / prevention of hyperphosphoremia.

INTERNATIONAL SEARCH REPORT

Information on patent family members

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| Int'l Application No |
| PCT/JP 01/07958 |

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